09/780,741

I CLAIM:

1. A method for operating a wireless local area network having at least one RF port, a plurality of mobile units and a cell controller coupled to said RF port, comprising:

operating said RF port to relay signals received from mobile units to said cell controller and to relay signals received from said cell controller to said mobile units,

operating said cell controller to control association of said mobile units with said RF port, including sending and receiving association signals between said RF port and said cell controller, said association of said mobile units utilizing at least two wireless local area subnetworks occupying common physical space,

operating said cell controller to send messages to and from said mobile unit via said RF port.

2. A method for operating a wireless local area network as specified in Claim 1, wherein signals are sent between said RF port and said cell controller using a first data protocol, and wherein signals are sent between said RF ports and said mobile units using a second data protocol, and wherein said signals between said RF port and said cell controllers comprise data packets using said first data protocol encapsulating data packets using said second data protocol.

3. A method for operating a wireless local area network as specified in Claim 2 wherein said first protocol is an Ethernet protocol.

4. A method for operating a wireless local area network as specified in Claim 3 wherein said second protocol is an IEEE Standard 802.11 protocol.

5. A method for operating a wireless local area network as specified in Claim 4 wherein said at least two wireless local area subnetworks comprise a subnetwork for public use and a subnetwork for secure use.

6. A method for operating a wireless local area network as specified in Claim 5, wherein upon activation of said subnetwork for secure use, suspending service on said subnetwork for public use.

7. A method for operating an RF port having a radio module, a digital processor, random access memory and read-only memory, comprising storing a bootloader program in said read-only memory, operating said digital processor to download instructions from a computer to said random access memory using said bootloader program and operating said RF port under said downloaded instructions to send and receive messages over at least two wireless local area subnetworks occupying common physical space using said radio module.

8. A method as specified in Claim 7, wherein said step of operating said RF port comprises receiving messages from said computer including protocol message portions for RF

message transmission, and transmitting said message including said protocol message portions as an RF signal.

9. A method as specified in Claim 8, wherein said step of operating said RF port comprises receiving RF messages having an RF protocol and sending said RF messages to said computer as data signals encapsulated in a further message protocol.

10. A method as specified in Claim 9 further comprising interpreting said RF protocol using said downloaded instructions and sending said RF messages to said computer only if said RF messages include an identification of said RF port.

11. A method as specified in Claim 7 wherein said downloaded instructions configure said computer and said RF port to operate as an access point for communication with mobile units.

12. A method as specified in Claim 7 wherein said computer is operated to control association of said mobile units with said computer and RF port.

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~~12~~ 13. A method as specified in Claim 7 wherein said downloaded instructions configure said computer and said RF port to operate as a mobile unit for communications with access points.

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14 ~~13~~. A method as specified in Claim 7 wherein said downloaded instructions configure said computer and said RF port to operate as either an access point or a mobile unit under control instructions form said computer.

15 ~~14~~. A method for transmitting signals having a wireless signals format using an RF port having an Ethernet interface, a data processor and an RF module, comprising providing an Ethernet data packet to said Ethernet interface, said Ethernet data packet encapsulating as data a data message having said wireless signal format, operating said data processor to provide said data message to said RF module, and operating said RF module to transmit said data message as an RF signal over at least two wireless local area subnetworks occupying common physical space.

16 15 ~~15~~. A method as specified in Claim ~~14~~ further comprising operating said data processor to perform a cyclic redundancy computation on said data message and adding the result thereof to said data message.

17 15 ~~16~~. A method as specified in Claim ~~14~~ further comprising operating said data processor to control said radio module.

18 ~~17~~. A method for receiving signals having a wireless signal format including

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wireless address data and message data at an RF port having a wired network interface, a data processor and an RF module, comprising operating said RF module to receive RF signals from at least two wireless local area subnetworks occupying common physical space having said wireless signal format, operating said data processor to receive wireless data signals from said RF module and provide data signals to said wired network interface comprising a data packet having a source address corresponding to said RF port using a protocol for said wired network, said data packet including said wireless address data and said message data.

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~~18~~. A method for receiving RF message signals having a wireless signal format including an address data format and message data using an RF port having an Ethernet interface, a data processor and an RF module, comprising receiving said RF message signals in said RF module from at least two wireless local area subnetworks occupying common physical space and providing said signals as data signals to said data processor, operating said data processor to interpret address data in said data signals and, in dependence on said address data encapsulating said message data and address data in an Ethernet packet and providing said Ethernet packet to said Ethernet interface.

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~~19~~. A method as specified in Claim 19 ~~18~~ wherein said data processor is operated to encapsulated said address data in said Ethernet packet.

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~~20~~. A method as specified in Claim 19 ~~18~~ wherein said data processor is further

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operated to perform a cyclic redundancy computation on said message data and to compare the result thereof with corresponding data received in said data signals.

22 ~~21~~. A method as specified in Claim 19 ~~18~~, further comprising operating said data processor to control said radio module.

23 ~~22~~. A simplified wireless local area network system comprising:

a computer having a data processor and a memory;

an RF port having an RF port data processor, an RF module and a data communications interface coupled to said computer;

a first program in said memory of said computer for operating said computer data processor to perform first wireless data communications functions, said functions including association with mobile units via at least two wireless local area subnetworks occupying common physical space; and

a second program for operating said RF port data processor to perform second wireless data communications functions.

24 ~~23~~. A system as specified in Claim 23 ~~22~~ wherein said second program operates said RF port data processor to perform second wireless data communications functions, including control of said RF module.

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25 ~~24~~. A system as specified in Claim 23 ~~22~~ wherein said second program operates said RF port data processor to perform second wireless data communications functions, including cyclic redundancy check functions.

26 ~~25~~. A system as specified in Claim 23 ~~22~~ wherein said second program is stored in said computer memory and wherein said RF port data processor is arranged to download said second program.

27 ~~26~~. A wireless access device for providing wireless access to a communication system, comprising a modem for sending and receiving data messages on said communications system and an RF port, comprising a data interface coupled to said modem, a data processor and an RF module, said processor being programmed to receive data messages from said modem, to format said messages for wireless data communications and to provide said formatted messages to said RF module for transmission by RF data signals to at least one remote station via at least two wireless local area subnetworks occupying common physical space, and to receive RF data signals from said at least one remote station via at least two wireless local area subnetworks occupying common physical space, and to provide data messages to said modem to be sent on said communications system.

28 ~~27~~. A wireless access device as specified in Claim 27 ~~26~~ wherein said communications system is a DSL communications system connected to the Internet, and wherein

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said modem comprises a DSL modem.

29 27
~~28~~. A wireless access device as specified in Claim ~~26~~ wherein said communications system is a two-way cable communications system connected to the Internet, and wherein said modem comprises a cable modem.

30 28
~~29~~. A wireless access device as specified in Claim ~~27~~ wherein said communication system comprises a fiber optic system, and wherein said modem comprises a fiber optical modem.

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~~30~~. A method for providing wireless access to the Internet, comprising providing a modem coupled to the Internet and having a data communications interface connected to an RF port, configuring said RF port for wireless data communication to a mobile unit having a predetermined wireless communications address, and providing at least one mobile unit configured with said predetermined wireless communications address for conducting RF data communications with said RF port via at least two wireless local area subnetworks occupying common physical space, said RF port being arranged to relay communications between said mobile unit and said modem.

32 31
~~31~~. The method specified in Claim ~~30~~ wherein said step of providing said mobile unit, comprises providing a computer having an RF port.

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33 ~~32~~. A system for sending and receiving data messages to at least one mobile unit, comprising:

at least one RF port having an RF module for sending and receiving data messages to said at least one mobile unit using a first RF communications protocol capable of operating via at least two wireless local area subnetworks occupying common physical space, having a wired interface for sending and receiving data messages using a wired communications protocol, and a programmed processor for relaying data messages received on said wired interface using said RF communications protocol and for relaying data messages received by said RF module using said wired communications protocol; and

at least one cell controller for sending data messages to said wired interface of said RF port and for receiving data messages from said RF port using said wired communications protocol.

34 ~~33~~. A system as specified in claim 33 ~~32~~, wherein there are provided a plurality of said RF ports, and wherein said cell controller is arranged to address said data messages to said RF ports using said wired communication protocol.

35 ~~34~~. A system as specified in claim 34 ~~33~~ wherein said at least one mobile unit is associated with one of said RF ports, and wherein said processor is programmed to interpret source address data received in said RF communications protocol and for relaying a received message using said wired communications protocol only if said source address data corresponds

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to a mobile unit associated with said RF port.

36 ~~35~~. A system as specified in claim 33 ~~32~~ wherein said cell controller is arranged to provide messages to said RF port comprising mobile unit address data and message data encapsulated in a data packet following said wired communications protocol.

37 ~~36~~. A system as specified in claim 36 ~~35~~ wherein said cell controller is arranged to provide said mobile unit address data and said message data in said RF communications protocol encapsulated in said wired communications format.

38 ~~37~~. A system as specified in claim 33 ~~32~~ wherein said RF port is arranged to encapsulate messages received by said RF module in a data packet using said wired communication protocol.